

IPOMOEA TEHUANTEPECENSIS (CONVOLVULACEAE):
A NEW SPECIES FROM THE ISTHMUS OF TEHUANTEPEC, MEXICO

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ABSTRACT

A new and narrowly endemic species from the Tehuantepec District of Oaxaca, *Ipomoea tehuantepecensis* L. Torres Colín, R. Torres Colín, M.P. Ramírez & J.A. McDonald, is described and illustrated. The new species belongs to a primitive assemblage of hairy-seeded lianas (*I.* subg. *Eriospermum* Verdc.) that exhibit specialized red and hypocrateriform corollas with exserted reproductive structures (*Ipomoea* ser. *Mirandinae* D.F. Austin). *Ipomoea tehuantepecensis* shares numerous morphological traits with *I. concolora* (Matuda) D. Austin and *I. konzattii* Greenm. in arid regions of southern Mexico but differs by glabrous laminas with obtuse to subcordate leaf bases, pleiocasial cymes, glabrous pedicels less than 6 mm long, glabrous sepals from 4–4.5 mm long and 2–3 mm wide, and glabrous corollas up to 3.0 cm long. In contrast, *I. konzattii* and *I. concolora* present pubescent laminas with cordate or truncate-obtuse leaf bases, monochasial cymes, pubescent pedicels from 7–15 mm long, sericeous sepals from 5–8 mm long, and pilose or sericeous corollas from 3.0–4.5 cm long.

RESUMEN

Se describe e ilustra a *Ipomoea tehuantepecensis* L. Torres-Colín, R. Torres-Colín, M.P. Ramírez & J.A. McDonald, una nueva especie endémica del Distrito de Tehuantepec, Oaxaca, México. La nueva especie se ubica en un grupo de lianas con semillas comosas (*I.* subg. *Eriospermum* Verdc.), las cuales presentan corolas rojas e hipocrateriformes y estructuras reproductivas exertas (*Ipomoea* ser. *mirandinae* D.F. Austin). *Ipomoea tehuantepecensis* está relacionada morfológicamente con *Ipomoea concolora* (Matuda) D. Austin e *I. konzattii* Greenm., de las cuales se distingue por sus hojas glabras con bases obtusas a subcordadas, inflorescencias en pleiocasios, pedicelos glabros de menos de 6 mm de largo, sépalos glabros, 4–4.5 mm largo y 2–3 mm ancho y corollas glabras hasta 3 cm largo. *Ipomoea konzattii* y *I. concolora* presentan hojas pubescentes con bases cordadas o truncado-obtusas, monocasios, pedicelos tomentosos o seríceos de 7–15 mm largo, sépalos seríceos, 5–8 mm largo, y corolas pilosas o seríceas de 3.0–4.5 cm largo.

Recent floristic investigations in the Tehuantepec District of Oaxaca, Mexico, have uncovered ten species of *Ipomoea* (Torres-Colín 1989; Torres et al. 1997), one of which is new to science. The new species belongs to *Ipomoea* subg. *Eriospermum* Verdc. on the basis of lignescent stems and comose seeds and is accommodated comfortably within *Ipomoea* ser. *Mirandinae* D.F. Austin s. str. (Austin 1977, 1979; = *I.* 'microsticta complex' sensu McPherson 1979 or *I.* ser. *Eriospermum* s. lat., Austin & Huáman 1996) on account of its deciduous leaves and relatively small (4.0–4.5 mm long), subequal sepals. These and a combination of ornithophilous floral features, including red, hypocrateriform corollas, and exserted reproductive structures suggest close relations with *Ipomoea concolora* (Matuda) D.F. Austin and *I. konzattii* Greenm., distinctions between which are presented herewith.

Ipomoea tehuantepecensis L. Torres-Colín, R. Torres-Colín, M.P. Ramírez & J.A. McDonald, sp. nov. (Figs. 1A–G). TYPE: MEXICO. Oaxaca: Distrito Tehuantepec, Mpio. Tehuantepec, road to Arroyo de Las Minas, to the W of Rancho Limón, 24 km to the W Tehuantepec, entering Hierba Santa on road to Buenos Aires (16°18'N, 95°27'W), 600 m, 23 Jan 1988, Rafael Torres C. 11255 & Cipriano Martínez R. (HOLOTYPE: MEXU; ISOTYPES: ENCB, MEXU, MO, OAX, PAUH).

Species haec ab *I. konzattii* Greenm. et *I. concolora* (Matuda) D. Austin differt laminis glabris basibus laminarum obtusis vel subcordatis pleiocymis pedunculis glabris pedicellis glabris maxima 6 mm longis sepalis glabris 4.0–4.5 mm longis 2–3 mm latis corollas glabris maxima 3 cm longis.

Twining lianas; Stems cylindrical, to 5 mm in diameter, bark yellow-brown, striate, glabrous, rarely squamose, lenticels abundant. Leaves deciduous before anthesis; blades ovate to broadly ovate, (3.8–)5.5–11.0

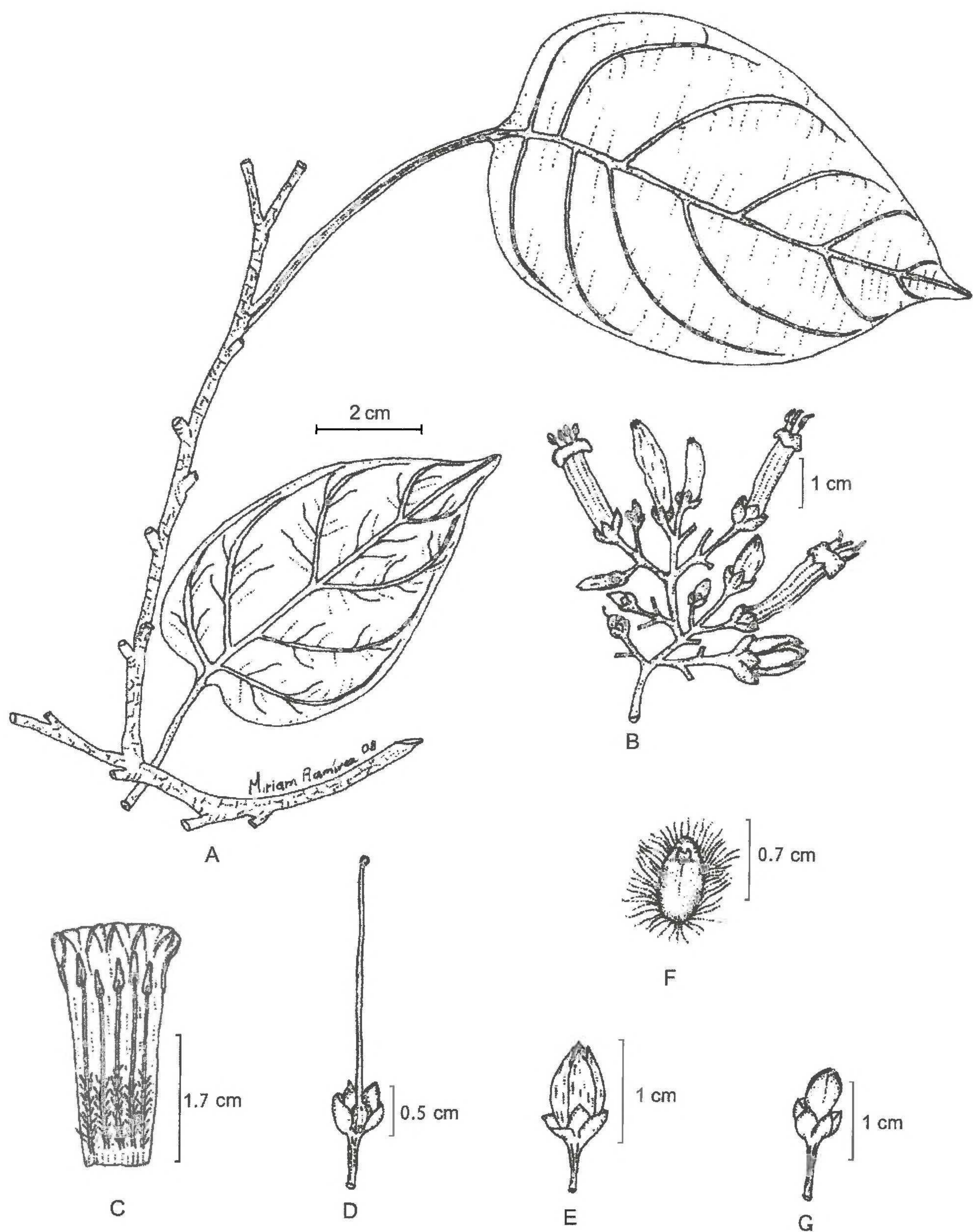


FIG. 1. *Ipomoea tehuantepecensis*. A. Vegetative features prior to anthesis, including stems and leaves (based on Campos 4116 and 3831). B. Compound pleiocasium with flower and fruit. C. Androecium of dissected corolla. D. gynoecium. E. Mature capsule (based on Rafael Torres 11255). F. Ventral surface of mature seed. G. Persistent septum of dehiscent capsule (based on Rafael Torres 4892).

cm long, (2.5–)3.5–8.5 cm wide, upper surface dark green, lower surface light green, chartaceous, glabrous on both surfaces, apex acute, base obtuse or rarely subcordate, margin entire; petiole basally canaliculate, distally terete, striate, (2.0–)3.0–8.7 cm long, 1–2 mm wide, glabrous. Inflorescence a pleiocasium 4.0–6.0 cm long, flowers 15–45, primary peduncle 1–3 mm long, glabrous, secondary peduncles 4–6 mm long, bracteoles deciduous; pedicels 4–6 mm long, erect, glabrous, sparingly dilated at the apex, striate; sepals

imbricate, reddish, ovate to broadly ovate, 4.0–4.5 mm long, 2–3 mm wide, chartaceous, glabrous, the margins entire, apex obtuse, rarely acute, mucronate; corolla hypocrateriform, red, 2.5–3.0 cm long, tube 2.5–2.8 cm long, 5–6 mm in diameter, limb irregularly 5-lobate; segments 3–6 mm long; stamens 5, subequal, exserted, filaments basally pubescent, anthers yellow; style exserted, glabrous, ca. 3 cm long, stigma capitate. Fruit a capsule, ellipsoid, 9–13 mm long, 6–7 mm wide, 4-valvate, brown, chartaceous, dehiscent, glabrous; seeds 4, brown, ellipsoid, three angled, 7 mm long, ca. 4.6 mm wide, the lateral margins comose, hairs cream, ca. 7 mm long.

Habitat.—*Ipomoea tehuantepecensis* thrives in short tropical deciduous forest on dry gradients between 200–750 meters. The vines prefer steep slopes with thin soil mantles and often grow in association with *Bursera schlechtendalii* Engl., *Gossypium aridum* (Rose & Standl.) Skovst., and *Juliania adstringens* Schldl.

Distribution.—As presently known, *I. tehuantepecensis* is a narrow endemic of Oaxaca, Mexico, known only from the District of Tehuantepec in the Municipalities of Santiago Laollaga and Santo Domingo Tehuantepec (Fig. 2).

Phenology.—*Ipomoea tehuantepecensis* flowers and fruits following the rainy season, from November to March.

Etymology.—The species epithet refers to the Isthmus of Tehuantepec, in which the new taxon is apparently restricted.

Specimens examined: **MÉXICO. Oaxaca:** Distrito de Tehuantepec, Municipio Santiago Laollaga, recorrido a las faldas del Cerro Indio Dormido, al S de Laollaga, *Alvaro Campos* V. 4116 (MEXU, PAUH). Municipio Santo Domingo Tehuantepec, Cerro Guiengola, 11 km al NO de Tehuantepec, *Alvaro Campos* V. 3831 y *Cipriano Martínez R.* (MEXU, PAUH); *Alvaro Campos* V. 4242 (MEXU, PAUH); Cerro Guiengola, 11 km al NE de Tehuantepec, *Abisai García M.* 2802, *L. Torres C.* y *L. Cortés A.* (MEXU); subida a las ruinas del Cerro Guiengola, *Leticia Torres C.* 243, *R. Torres C.* y *C. Martínez R.* (MEXU); Cerro Guiengola, ladera S entrando por Paso Alicia, *Leticia Torres C.* 306, *R. Torres C.* y *C. Martínez R.* (MEXU, PAUH); ruinas del Cerro Guiengola, al N de Tehuantepec, *Leticia Torres C.* 336, *R. Torres C.*, *Pedro Tenorio L.* y *Cipriano Martínez R.* (MEXU, PAUH); ladera S del Cerro Guiengola, por la fábrica de cal, *Leticia Torres C.* 774, *R. Torres C.*, *L. Cortés A.* y *Cipriano Martínez R.* (MEXU, PAUH); Cerro Guiengola at the ruins, *P.J. Stafford* 8 y *R.J. Hampshire* (MEXU); Cerro Guiengola, al N de Tehuantepec, *Rafael Torres C.* 4892 y *Cipriano Martínez R.* (MEXU, PAUH).

DISCUSSION

Ipomoea tehuantepecensis and its close relatives, *I. concolora* and *I. conzattii*, belong to an assemblage of deciduous lianas that extends from southern Mexico to northern South America, with a secondary center of diversity in the Caribbean (Austin 1977). *Ipomoea tehuantepecensis* is distinguished by glabrous laminas with an obtuse or subcordate leaf base, while the blades of *I. conzattii* are strigose and elliptical with obtuse bases. Laminas of *I. concolora* are tomentose on the undersurface and basally cordate. Whereas *I. tehuantepecensis* produces compound cymes with secondary peduncles from 4–6 mm long, *I. conzattii* and *I. concolora* exhibit simple cymes with secondary peduncles that range from 2–4(–5) mm long. Glabrous pedicels of *I. tehuantepecensis* are relatively short, ranging from 4–6 mm long, contrasting with those of *I. conzattii* and *I. concolora*, which are pubescent and 10–15 mm or 7–12 mm long (respectively).

Like many other *Ipomoea* species, *I. tehuantepecensis* is readily diagnosed by distinctive sepals, these being reddish, glabrous, and relatively small (4–4.5 mm long, 2.3 mm wide). In contrast, sepals of *I. conzattii* are greenish, sericeous, 5–7 mm long, and 4–6 mm wide, and those of *I. concolora* are reddish, sericeous, 7–8 mm long, and 3.5–4 mm wide. The brightly colored, glabrous corollas of *I. tehuantepecensis* are 2.5–3.0 cm long, the tube less than 2.8 mm in diameter at base and 5.0–6.0 mm from the middle to the throat, while corollas of *I. conzattii* and *I. concolora* are pilose and sericeous (respectively), measuring from 3.0–4.5 cm long. These and other less discrete distinctions are summarized in Table 1.

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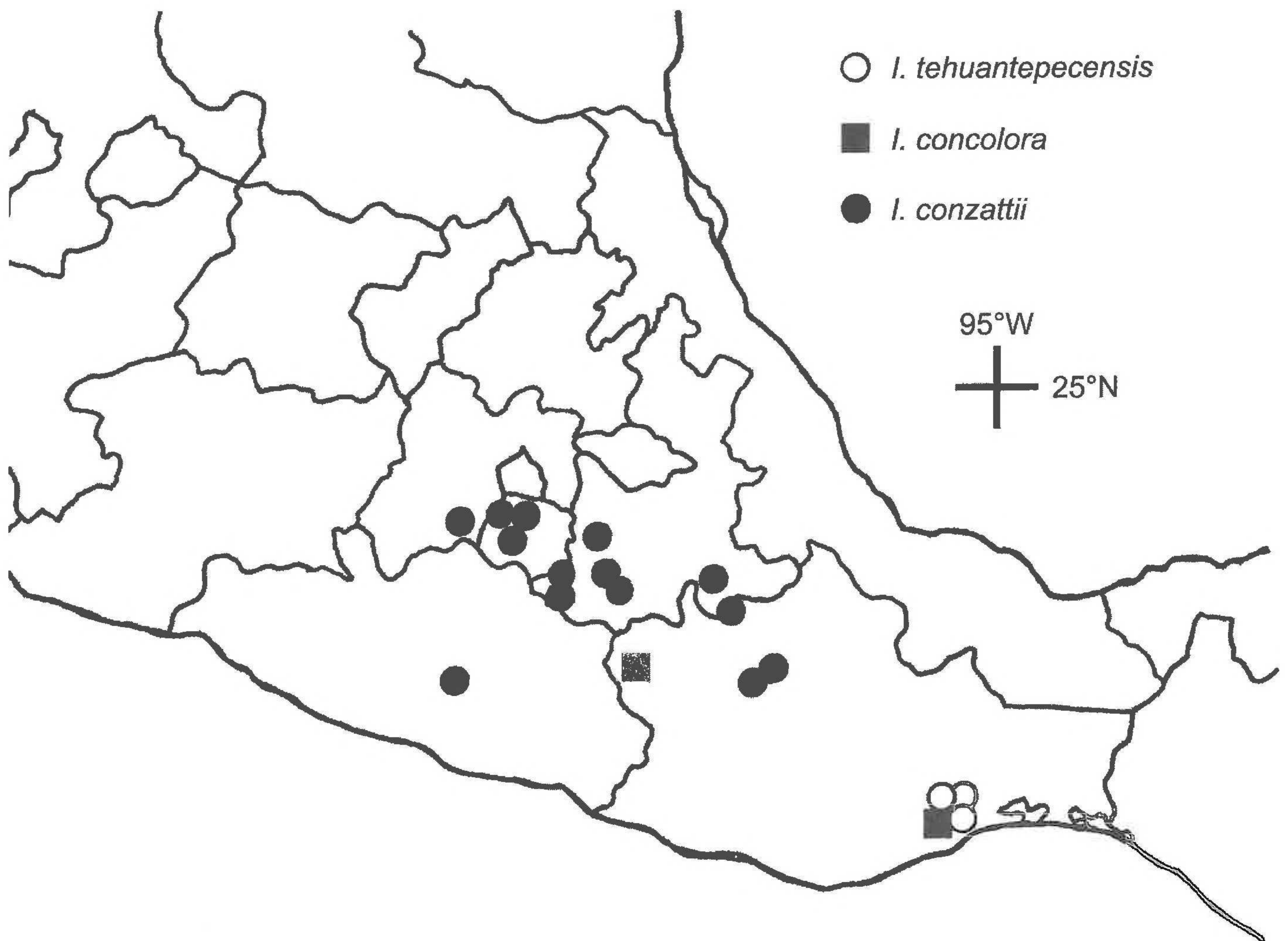


FIG. 2. Known distributions of *I. tehuantepecensis* (open circles), *I. concolora* (closed squares) and *I. conzattii* (closed circles) in arid regions of southern Mexico. Note that *I. tehuantepecensis* and *I. concolora* are partially sympatric.

TABLE 1. Comparative morphology of *Ipomoea concolora*, *I. conzattii*, and *I. tehuantepecensis*

	<i>Ipomoea conzattii</i>	<i>Ipomoea concolora</i>	<i>Ipomoea tehuantepecensis</i>
Blades	Elliptic, base truncate to obtuse, both surfaces strigose	Broadly ovate, base cordate, upper surface glabrous, lower surface tomentose	Ovate to broadly ovate, base obtuse to subcordate, glabrous on both surfaces
Inflorescence	Monochasium, secondary peduncles 3–5 mm long, tomentose	Monochasium, secondary peduncles 2–4 mm long, sericeous	Pleiocasium, secondary peduncles 4–6 mm long, glabrous
Pedicels	10–15 mm long, tomentose	7–12 mm long, sericeous	4–6 mm long, glabrous
Sepals	5.0–7.0 mm long, 4–6 mm wide, greenish, sericeous, apex acute to roundish, not mucronate	7.0–8.0 mm long, 3.5–4.0 mm wide, reddish, sericeous, apex acute, not mucronate	4.0–4.5 mm long, 2–3 mm wide, reddish, glabrous, apex obtuse, mucronate
Corolla	3.0–4.5 cm long, scarcely pilose, tube 2.5–3.5 cm long, 0.5–0.7 cm wide, limb segments 1.0–1.5 cm long	3.3–4.0 cm long, sericeous, tube 3.0–3.6 cm long, 0.5–0.6 cm wide, limb segments 0.3–0.4 cm long	2.5–3.0 cm long, glabrous, tube 2.5–2.8 cm long, 0.5–0.6 cm wide, limb segments 0.3–0.6 cm long

REFERENCES

- AUSTIN, D.F. 1977. Realignment of the species placed in *Exogonium* (Convolvulaceae). *Ann. Missouri Bot. Gard.* 64:330–339.
- AUSTIN, D.F. 1979. An infrageneric classification for *Ipomoea* (Convolvulaceae). *Taxon* 28:359–361.
- AUSTIN, D.F. AND Z. HUÁMAN. 1996. A synopsis of *Ipomoea* (Convolvulaceae) in the Americas. *Taxon* 45:3–38.
- McPHERSON, G.D. 1979. Studies in the genus *Ipomoea* (Convolvulaceae). Ph.D. Dissertation, University of Michigan.
- TORRES, C.M.L. 1989. Estudio florístico y descripción de la vegetación del Cerro Guiengola en el Istmo de Tehuantepec, Oaxaca. Tesis de Licenciatura, Escuela Nacional de Estudios Profesionales Iztacala, Universidad Nacional Autónoma de México. México D.F.
- TORRES, C.R., L. TORRES, P. DÁVILA, AND J.L. VILLASEÑOR. 1997. Listados florísticos de México. XVI. Flora del Distrito de Tehuantepec, Oaxaca. Instituto de Biología. Universidad Nacional Autónoma de México.